

REMARKS

The Office Action dated May 13, 2009 has been fully considered by the Applicant. Independent Claim 1 is hereby amended.

The rejection of Claims 1 through 6 and 10, as now amended, under 35 U.S.C. § 103(a) as being unpatentable over Maier (UK 1448158) in view of Cramwinckel (US 3,822,556), further in view of Chen [Construction and Building Materials 16 (2002) 313-319, Jian-Shiuh Chen, Evaluation of internal resistance in hot mix asphalt concrete], and still further in view of Schmanski (US 5,290,833) is respectfully traversed. Likewise, the rejection of Claims 7-8 under 35 U.S.C. § 103(a) as being unpatentable over Maier in view of Cramwinckel, further in view of Chen, further in view of Schmanski, and still further in view of Malloy et al. (US 6,669,773) is respectfully traversed.

Claim 1, as presently amended, requires the aggregate be comprised of no more than about 15% by weight natural sand, "wherein said aggregate that is not natural sand is manufactured sand with an angularity of at least 38%." Although Maier teaches a mineral mixture with 12% natural sand, the remaining 88% is not manufactured sand. Furthermore, to the extent that part of the remaining mixture is manufactured sand, it is not required to have an angularity of at least 38%. Likewise, none of the other cited references require manufactured sand with an angularity of at least 38% as an aggregate. Therefore, Claim 1 is not obvious in light of the combination of Maier, Cramwinckel, Chen, and Schmanski. Claims 2-8 and 10 are dependent on Claim 1 and are believed patentable for the same reason.

Furthermore, Claim 1, as presently amended, requires the aggregate/asphalt binder mixture to be covered with an asphalt overlay. However, neither Maier, Cramwinckel, Chen, Schmanski, nor Malloy require such an asphalt overlay. Therefore, Claim 1 is not obvious in light of the combination of Maier, Cramwinckel, Chen, and Schmanski. Claims 2-8 and 10 are dependent on Claim 1 and are believed patentable for the same reason.

Furthermore, the Applicant reiterates its arguments concerning Chen's teaching away from using a high percentage of small aggregate. The Applicant previously pointed this out in the Amendment dated March 5, 2009, and yet the Examiner continues to rely on Chen. Independent Claim 1 requires the

aggregate to be “comprised of about 80% by weight to about 100% by weight aggregate having a sieve size of less than about 4.75 mm.” The Examiner notes in item 9 of the Office Action that “both Maier and Cramwinckel are silent as to the percentage of aggregate less than about 4.75 mm.” In item 10, the Examiner cites Chen as teaching that a mixture with 50% aggregate under 4.75 mm “has increased tensile strength over the other samples and low void formation compared to other samples.” The Examiner specifically references figures 2 and 3 of Chen in support of this statement. The Examiner then, in item 11, concludes that it would have been obvious to include 50% or more aggregate under about 4.75 mm in the mixture of Maier and Cramwinckel, and further to increase the aggregate less than about 4.75 mm to a range of about 60% to about 99.8% based on the data of figure 2 of Chen, which, the Examiner alleges, implies that an increase in the percentage would lead to higher tensile strengths and therefore stronger roads.

However, a thorough reading of Chen, with figure 2 considered in context, reveals that any conclusions drawn from the test results displayed in figure 2 are flawed and, in fact, Chen teaches away from concluding that increasing the percentage of aggregate results in stronger roads. Chen does find that Marshall stability and indirect tensile tests suggest that the stability and the indirect tensile strength increase when the ratio passing through the 4.75-mm sieve increases. Chen, p. 315-16. However, when directly testing for internal resistance, Chen finds contrary results, indicating that the aggregate skeleton might start losing its internal resistance at approximately 45% passing through the 4.75-mm sieve. Chen, p. 318. Therefore, Chen concludes that the Marshall stability and indirect tensile tests may not be good indicators of measuring internal resistance, and that such tests are inadequate. Chen, p. 317, 319. In other words, Chen concludes that the results of the Marshall stability and indirect tensile tests, shown in Figures 1 and 2, are wrong. Thus, Chen actually teaches away from an assumption that increasing the aggregate passing through a 4.75 mm sieve above 45% produces improved results. It would not be obvious, based on Chen, to assume that increasing the aggregate passing through a 4.75 mm sieve to 80% or greater would produce better roads, as argued by the Examiner.

Based on the foregoing, while figure 2 does show increased indirect tensile strength with increased percentage of aggregate below 4.75 mm, Chen in fact teaches away from using greater than 45% aggregate in a hot mix asphalt mixture. Therefore, it would not be obvious, based on Chen, to use about 80% by weight to about 100% by weight aggregate having a sieve size of less than about 4.75 mm in the mixture of Claim 1. Chen thus fails to cure the deficiency of the combination of Maier and Cramwinckel. Consequently, Claim 1 is not obvious or unpatentable over Maier in view of Cramwinckel and further in view of Chen.

Claims 2-8 and 10 are dependent on Claim 1 and are believed patentable for the same reasons.

Finally, the Claim 2 requires the asphalt binder of Claim 1 to be a polymer modified asphalt binder. The Examiner cites Schmanski as teaching an asphalt aggregate comprising sand and a polymer binder. However, while Schmanski does so teach, Schmanski does not teach a polymer modified asphalt binder. Just combining one material containing asphalt with another material containing a polymer binder does not produce a polymer modified asphalt binder. Thus, Schmanski fails to suggest using a polymer modified asphalt binder.

Based on the foregoing, despite mixing asphalt with a material containing polymer binder, Schmanski does not suggest using a polymer modified asphalt binder, as required in Claim 2. Cramwinckel, Chen, and Maier also fail to suggest a polymer modified asphalt binder. Therefore, Claim 2 is not obvious or unpatentable over Maier in view of Cramwinckel and further in view of Chen and still further in view of Schmanski.

It is submitted that the application is now in condition for allowance and such action is earnestly solicited. The Commissioner is authorized to charge any additional fees associated with this application or credit any overpayment to Deposit Account No. 08-1500.

Respectfully submitted,



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